

**LIGYROCORIS BARBERI (HETEROPTERA: LYGAEIDAE),
A NEW SEEDBUG FROM THE SOUTHEASTERN UNITED
STATES WITH A DISCUSSION OF ITS ECOLOGY,
LIFE CYCLE, AND REPRODUCTIVE ISOLATION**

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Abstract.—*Ligyrocoris barberi* new species is described from southeastern United States. A key is presented to the nine species of *Ligyrocoris sensu stricto* in eastern United States. In Texas *L. barberi*, a pterygopolymorphic species, inhabits dry prairie communities where the bug feeds on ripe seeds of *Rudbeckia hirta* L. (Compositae). *L. barberi* is shown to be reproductively isolated by behavior from its nearest relative, the more northern *L. diffusus*.

Barber (1914) described *Ligyrocoris slossoni* from a male specimen collected by Mrs. A. T. Slosson at Lake Worth, Florida. In 1921 in his revision of the genus *Ligyrocoris*, Barber came to the conclusion that the unique holotype was imperfect, saying "the reddish coloration of the head and pronotum may be due to its immaturity." Accordingly, he omitted the species from his key to the species of *Ligyrocoris*. In 1924, based on a female specimen collected by W. S. Blatchley at Dunedin, Florida, he concluded that *L. slossoni* was a valid species, redescribed it, and placed it close to *L. sylvestris* (L.) For the next 30 years in his long and distinguished career he identified as *L. slossoni* specimens from throughout southeastern United States. Based on these determinations seen in many collections, I had assumed that the species whose ecology I had been studying in Texas was *L. slossoni*. However, when I had an opportunity to study the type-specimen of *L. slossoni* (USNM type 62528), in conjunction with two female specimens from Florida (Alachua Co., 6/24/1923 RLT; Gainesville, Fla. JRW 5413), I realized that two different species were being carried under the name *L. slossoni*. I also studied the above noted female specimen collected by Blatchley and confirmed that it is the true *L. slossoni*. From the sparse available evidence, *L. slossoni* itself appears to be a northern Florida endemic species which is apparently rare, as it is known only from these four specimens. The other species, which is being described here as new, is widespread through the southeastern states and is sympatric with *L. slossoni* in northern Florida. The reference to *L. slossoni* in Sweet (1963) actually refers to this new species.

I name this new species in honor of Harry G. Barber who contributed so much to our knowledge of North American Lygaeidae, including a revision of the genus *Ligyrocoris*. Further, I take pleasure in dedicating this paper to Dr. R. C. Froeschner, without whose kind assistance at the Smithsonian National Museum of Natural History I would not have resolved this systematic problem.

MATERIALS AND METHODS

The sources of the specimens of the type-series are indicated by the abbreviations given in the acknowledgments. The description and measurements of the holotype

were made with the aid of a Wild M5 Stereomicroscope with a maximum magnification of $150\times$. All measurements are in mm. Illustrations were made with the aid of an ocular grid and graph paper. In the field and laboratory studies, the methods used are similar to those of Sweet (1964). Insects were collected by hand, using an aspirator. They were observed and reared in 20 mm deep plastic petri dishes containing natural ground litter, seeds, and methyl cellulose cotton. Water was provided in a vial stoppered with absorbent cotton. The insects were kept at room temperature under prevailing day lengths in the laboratory. Cool conditions for diapause studies were provided with refrigerator/incubator equipped with photoperiod controls.

***Ligyrocoris barberi*, new species**

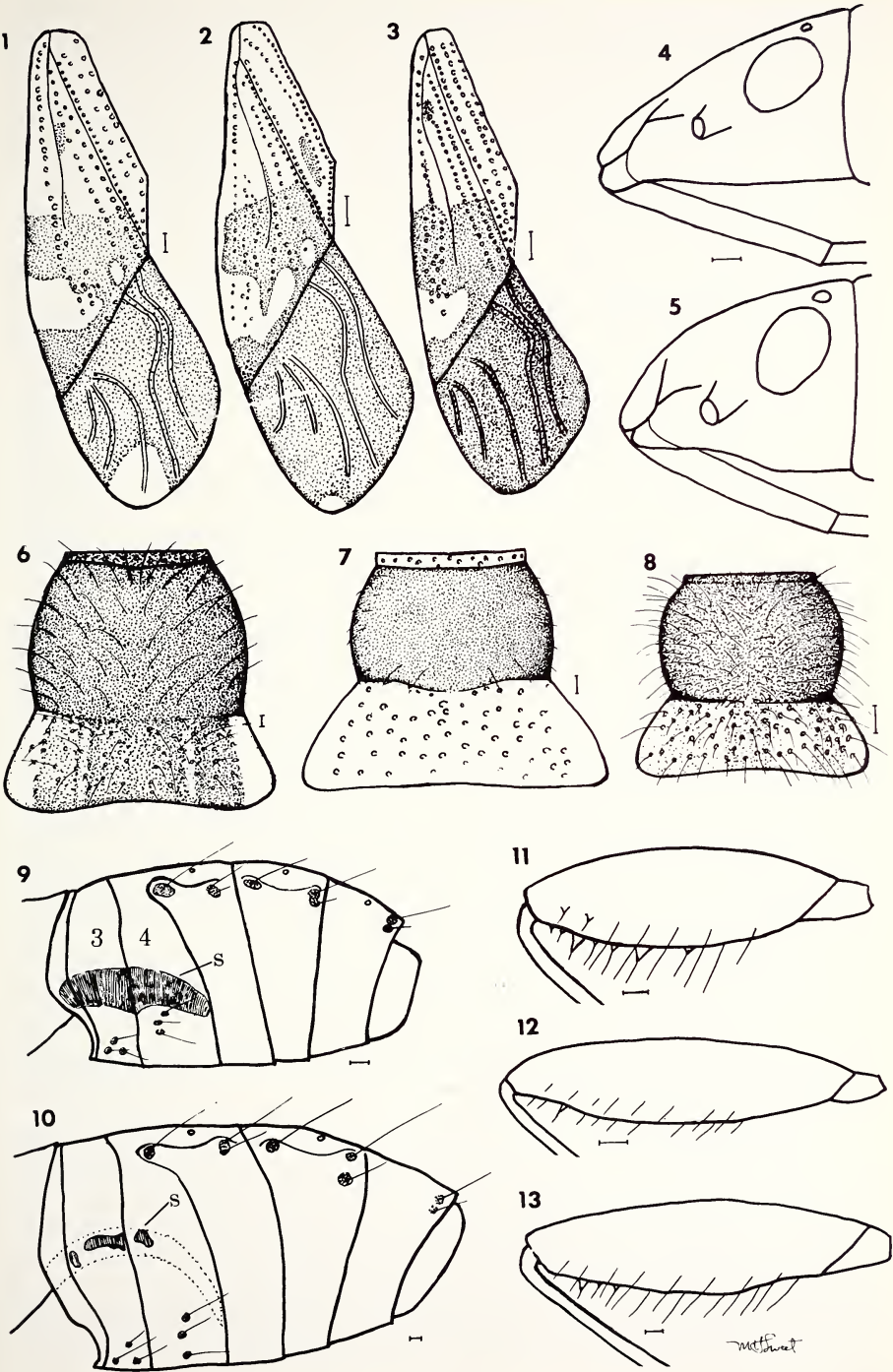
Figs. 1, 4, 5, 8, 10

Description. Hemelytron and thorax except for lateral bars on mesosternum pruinose, other body areas subshining; pruinosity heavier, bloomlike on anterior lobe of pronotum, anterior $\frac{1}{2}$ of scutellum and anterior $\frac{1}{2}$ of hemelytron. Head except apex of tylus, anterior lobe of prothorax, anterior $\frac{2}{3}$ of scutellum and most of the venter dark brown; pronotal collar, posterior lobe of pronotum, apical $\frac{1}{3}$ of scutellum, acetabula, metapleural flange, pale yellow-brown; tylus, coxae, distal $\frac{2}{3}$ of femora and antennal segment 4 light reddish brown, legs and other antennal segments pale yellow; 3 obscure longitudinal infuscations on posterior lobe of pronotum (Fig. 5); hemelytron including epipleuron pale tan, conspicuously marked with ferruginous brown (Fig. 1), a post median transverse dark bar (fascia) extending from distal $\frac{1}{3}$ of clavus completely to lateral margin of corium; small pale spot in medial angle of corium, larger pale spot posterior to fascia; membrane dark with bright white spot on apex, veins very obscurely paler.

Entire dorsum densely and evenly covered with erect hairs 0.25 long; shorter, suberect hairs on antennae, legs, and abdomen; silky adpressed hairs on pleura and thoracic sterna; head roughened or shagreened with micropunctures; anterior lobe of pronotum, pleura, and sterna faintly and sparsely punctate; posterior lobe of pronotum (Fig. 6), scutellum, and hemelytron (Fig. 1) with larger punctures; clavus with three rows of punctures, the medial 2 rows uneven, corium with row of punctures on each side of Cu, a row lateral to medial fracture, and a field of punctures in center of corium.

HEAD. Slightly exserted, relatively large, porrect, flattened in lateral view, with tylus relatively elongate (Fig. 4); head length 0.78, width 0.98, interocular distance 0.53, interocellar distance 0.34, preocular length 0.55, postocular distance 0.08; tylar sutures converging posteriorly, length of tylus 0.22, lorum (maxillary plate) distinctly swollen and polished, bucculae low, meeting in a V directly behind labium. **PRONOTUM** (Fig. 6). Transversely constricted into distinct lobes, the troughlike incisure breached by a slight median carina, anterior lobe globose and equal in height to

Figs. 1-13. *Ligyrocoris* spp. 1-3. Hemelytra. 1. *L. barberi*. 2. *L. diffusus*. 3. *L. slossoni*. 4, 5. Head, lateral view. 4. *L. barberi*. 5. *L. diffusus*. 6-8. Pronotum, dorsal view. 6. *L. obscurus*. 7. *L. slossoni*. 8. *L. barberi*. 9, 10. Abdomen, lateral view. 9. *L. barberi*. 10. *L. obscurus*. Figs. 11-13. Fore femur, sublateral view. 11. *L. barberi*. 12. *L. delitus*. 13. *L. slossoni*. s, stridulitrum. Scales lines equal 0.1 mm.



posterior lobe; the narrow anterior collar an impressed ring, not set off by a distinct incised line; length of pronotum 0.97, anterior lobe 0.63; width of anterior lobe 0.93, posterior lobe 1.20. SCUTELLUM. Little longer than wide (0.80:0.70) with low median carina. HEMELYTRA. Brachypterous (submacropterous), extending to $\frac{1}{2}$ length of tergum 7; lateral margin of corium nearly straight, length of corium 1.80, width 0.60, length of commissure 0.40, distance from apex of clavus to apex of corium 0.70; distance from apex of corium to apex of membrane 0.49. *Mesopleuron* neither swollen nor visible from above; mesepimeron barely closed, metepisternum contacting mesepisternum; evaporium small, restricted to lower $\frac{1}{4}$ of metapleuron and mesepimeron and extending dorsad along meso-metapleural segmental suture, auricle not calloused. ANTENNAE. Segments 1–3 terete, 4 fusiform, thickest (0.11); length of segments I 0.35, II 0.96, III 0.95, IV 1.05. LABIUM. Elongate, attaining fourth (third visible) abdominal sternum; labial lengths I 0.75, II 0.85, III 0.86, IV 0.40. LEGS. *Fore femur* (Fig. 11) moderately incrassate, width 0.38, length 1.27, armed on inner distal ventral surface with two large and 5–6 smaller spurs, each bearing a slender long seta; two small distal spines and row of long setae on outer under surface of femur; *mesotibia* with 4 rows, protibia and metatibia with two rows of moveable pale spines; length of metatibia 1.60, lengths of metatarsomeres I 0.66, II 0.18, III 0.15; plectrum a field of 19–20 tubercles on inner proximal surface of metafemur; stridulitrum (Fig. 11, s) a broad striate arc extending from sternum II to sternum IV, striae 0.046 apart. Total length 4.5.

Holotype. Brachypterous ♂, TEXAS. *Brazos Co.*, College Station, July 25, 1964, M. H. Sweet, deposited in National Museum of Natural History, Washington, D.C.

Paratypes. 6♂♂, ♀, same data as holotype, also deposited in J. A. Slater and British Museum collections. ALABAMA. ♀, Alexander City, Aug., G. Nelson (LSU). ARKANSAS. ♂, De Queen, VI-6-1951, L. D. Beamer (SMK). FLORIDA. *Duval Co.*, 2♂, ♀, (NMNH). GEORGIA. ♀, Stone Mountain, VIII-3-13. ILLINOIS. ♂, Dubois, Aug. 10, 1917 (UIU). KANSAS. *Bouhon Co.*, ♀, Redfield, 1 mi N, July 13, 1966, Jean & Wilton Ivie (SMK). MISSISSIPPI. 2♀, Fulton, 7-14-30, R. H. Beamer; ♂, ♀, Wiggins, August 15, 1936, H. M. Harris (NMNH). MISSOURI. *Adair Co.*, ♀, Thousand Hills State Park, VII-3-1975, S. E. Thewke (SMK). NORTH CAROLINA. ♂, 2♀, Valley of Black Mts., July 9, 1906, W. Beuttenmuller; 2♀, ♂, *ibid.*, August 9, 1906 (NMNH). OKLAHOMA. ♀, Idzbel, 10-VI-31, C. C. Deonier. TEXAS: *Brazos Co.*, 3♂♂, ♀, College Station, Sept. 14, 1964; ♀, *ibid.*, Sept. 14, 1964; ♀, *ibid.*, Sept. 20, 1964; 13♂, 8♀, *ibid.*, April 23, 1965; ♂, 3♀, *ibid.*, July 8, 1965; ♀, *ibid.*, Oct. 10, 1965, 6♂, 10♀, *ibid.*, Oct. 15, 1979, ♂, 4♀, *ibid.*, Oct. 22, 1965; 2♀, *ibid.*, Oct. 10, 1976; 11♂, 21♀, *ibid.*, Oct. 15, 1979; ♂, 4♀, *ibid.*, Nov. 8, 1979 (MHS, JAS, BM); ♂, Navasota, Texas, 5-12-1948, M. Polhemus. ♀, *Burleson Co.*, 3 mi E of Lyons on FR 60, 8-VI-1974, H. Greenbaum, sweeping (TAMU).

Diagnosis. Because it has a complete transverse dark fascia (Fig. 1) on the corium like *L. slossoni* (Fig. 3), *L. barberi* was confused with this species. *L. slossoni* has a unicolorous dark red head, reddish femora and tibia contrasting with yellow tarsi. The pronotum (Fig. 8) is nearly nude except for a few hairs, and there is only one major fore femoral spine (Fig. 12). *L. barberi* has instead a dark brown head and the unicolorous pale yellow tibia and tarsus. The pronotum (Fig. 8) is densely hairy, and there are two major fore femoral spines (Fig. 11). *L. slossoni* is actually more closely related to *L. litigiousus* in having a distinct groove demarcating a punctate pronotal

collar (Fig. 8), and in having a shiny metapleuron. In *L. barberi* and most other species of *Ligyrocoris sensu stricto*, the metapleuron is pruinose and the pronotal collar is not set off by a distinct groove (Fig. 6).

In my key (Sweet, 1963) to the northeastern *Ligyrocoris*, *L. barberi* will run to *L. diffusus*. From *L. diffusus*, *L. barberi* can be told by its complete post-median, transverse fascia (Fig. 1) which broadly attains the lateral margin of the corium, its large, pale apex of the membrane, its more elongate and porrect head (Figs. 4 and 5) and its very long labium which reaches abdominal segment 4. In *L. diffusus* the fascia (Fig. 2) does not quite attain the lateral corial margin, the membrane has a small white apex, and the labium reaches only the metacoxae. *L. barberi* is a smaller, more brightly colored species of which most specimens are submacropterous, whereas *L. diffusus* is usually macropterous, especially in the zone of sympatry between the two species.

KEY TO SPECIES OF *Ligyrocoris SENSU STRICTO* OF THE UNITED STATES EAST OF THE 100th PARALLEL¹

1. Stridulitrum (Fig. 10, s) inconspicuous, only striate spots clearly visible on lateral side of abdominal sterna 3 and 4, the stridulitrum otherwise obscured by fine hairs; pronotum (Fig. 6) weakly constricted dorsally into lobes *obscurus* Barber
- Stridulitrum (Fig. 9) extending sublaterally as a broad conspicuous striate arc devoid of hairs from sternum 2 to sternum 4; pronotum (Figs. 7, 8) strongly constricted both laterally and dorsally into lobes 2
2. Metapleuron subshiny like abdomen; pronotal collar set off by a sharply incised linelike groove (Fig. 7) 3
- Metapleuron pruinose like rest of thorax; pronotal collar an impressed ringlike area, not set off by a distinct groove (Fig. 8) 4
3. Corium (Fig. 3) with a post-median, dark, transverse fascia; membrane unicolorous dark; head and femora distinctly unicolorously reddish, not mottled *slossoni* Barber
- Corium with lateral margin pale, membrane mottled dark and pale, head dark brown, femora pale mottled with dark spots *litigiosus* Stål
4. Femora armed beneath distally with one or two small spines (Fig. 12); anterior lobe of pronotum pale or mottled *delitus* Distant
- Femora armed beneath with two large spines and 5–6 smaller spines (Fig. 11); anterior lobe of pronotum unicolorous dark brown 5
5. Entire dorsum densely covered with long, erect hairs (Fig. 8), labium extending to metacoxae or abdomen; femora (Fig. 11) with many setae, these longer than width of tibia 6
- Dorsum with a few scattered, erect hairs (as Fig. 7), labium short, extending only to mesocoxae, femora with few setae, these shorter than width of tibia 7
6. Fascia not extending completely to lateral margin of corium (Fig. 2), labium extending to metacoxae *diffusus* Uhler
- Fascia completely attaining lateral margin of corium (Fig. 1), labium long, attaining abdominal sternum 4 *barberi*, new species

¹ Excluded from the key are species moved by Harrington (1980) to *Froeschneria*: *L. piligerus* Stål (= *L. abdominalis* Guérin-Meneville) and *L. multispinus* Stål (= *L. confraternus* Barber). The western USA and Mexican species of *Ligyrocoris* are being studied and will be treated in a later publication. The western "*L. diffusus*" and "*L. delitus*" populations each evidently comprise complexes of closely related species.

7. Basal metatarsomere twice combined length of distal tarsomeres (67:33); size small, length 4.77 to 5.18; metapleura never inflated and visible from above *carices* Sweet
- Basal metatarsomere nearly three times combined length of distal tarsomeres (92:34); size larger (5.16 to 7.47) 8
8. Post-median, transverse fascia fuscous and broadly attaining lateral margin of corium; labial segment III longer than I (0.70:0.63); pale spot at mesal angle of corium faint or absent; basal and apical spots on membrane never confluent; fore femora usually fuscous *sylvestris* (Linnaeus)
- Post-median transverse fascia weak, ferrugineous, often absent; labial segment III shorter than I (0.57:0.67); basal and apical pale spots on membrane usually confluent, fore femora usually light yellow brown *depictus* Barber

Variation. *L. barberi* is pterygopolymorphic throughout its range. In the macrop-terous form, the wings fully exceed the posterior end of the abdomen (tergum 7). In the brachypterous form, which is much more common (88% of specimens of type-series), the wings attain but do not exceed tergum 7. In coloration some probably more teneral specimens are lighter pigmented and have somewhat reddish abdomens, femora, antennal segments, and heads. The obscure infuscations on the posterior lobe of pronotum are frequently absent.

Two specimens, one from Chicago, Illinois, and one from Hamar, North Dakota (7-27-37, C. L. Johnson), resemble *L. barberi* in size, investiture, and coloration, but are excluded from the type-series because the labium does not attain the abdomen, and the head is much more convex in front of eyes, much as in *L. diffusus* (compare Figs. 4 and 5). These specimens are like *L. barberi* but different from *L. diffusus* in being smaller and having the dark, transverse fascia extending completely to the lateral margin of the hemelytron. These specimens may represent yet another species of the *Ligyrocoris* complex, one well to the north of the known range of *L. barberi*, but more specimens and experimental studies are needed to test this hypothesis.

Distribution. *L. barberi*, as indicated by the above records, ranges across south-eastern USA and is sympatric with *L. slosoni* and *L. litigosus* in Florida, and overlaps the range of the closely related *L. diffusus* in Arkansas, Illinois, Kansas, North Carolina, and Oklahoma. *L. barberi* is probably the species identified from Missouri by Froeschner (1944) as *L. sylvestris*, which otherwise has a boreal range (Sweet, 1964).

Ecology. While a widespread species, *L. barberi* is relatively uncommon overall and is infrequently encountered in general collecting. In Texas, despite my extensive collecting throughout the state, I have encountered the species only in College Station, which probably merely reflects the intensity of local collecting around College Station in my biological studies on the Lygaeidae. I was able to study two populations for several years in different locations in the College Station area.

At both locations *L. barberi* was found on the ground in open areas in dry prairie habitats where *Rudbeckia hirta* (L.) (Black-eyed-Susan), its annual composite host plant, grew with other forbs among scattered grass clumps, chiefly *Schizachyrium scoparium* (Michx.) Nash admixed with some *Aristida* sp. and *Paspalum* spp. In one location the surface soil was sandy, in the other, clayey. In contrast to *L. diffusus*, which was abundant in early successional as well as old field communities, *L. barberi* was not found in early successional communities in Texas, despite the large invasion of *Rudbeckia* into such communities. As is usual in rhyparochromine lygaeids (Sweet,

1964), the predominantly brachypterous condition of *L. barberi* correlates with the relatively permanent habitats of the insect. However, it is difficult to evoke this as the reason for the insect's apparent absence in early successional stages and roadsides since its host plant, *Rudbeckia*, a natural component of the southwestern prairie community, is abundant in such successional habitats and forms stands which are in essential continuity between prairies and roadsides. Competition with other seed-feeding rhyparochromines may be involved, especially with relation to the life cycle of *L. barberi*.

Life history. The life cycle of *L. barberi* revolves around that of its host, which begins blooming in late spring and largely finishes seed production in midsummer (July) in College Station. When starving in the laboratory, *L. barberi* fed on other composite seeds such as *Helianthus annuus* L. (sunflower), but the insect did not complete its life cycle from egg to egg (first generation) except on ripe *Rudbeckia* seeds. Survival of adults was poor on all other seeds, including sunflower seeds. As in *L. diffusus* (Sweet, 1964), the insects carry *Rudbeckia* seeds about and aggressively defend them from conspecifics, especially of the same sex.

The phenology described here is based on data from the two populations of *L. barberi* in College Station, Texas. Like the more northern *L. diffusus* (Sweet, 1964), there were only two generations a year of the insect in Texas despite the long, warm season. Like most other members of the *L. diffusus* complex (Sweet, 1964), *L. barberi* overwintered as eggs in diapause. The eggs hatched in March and the nymphs fed on overwintered, fallen, ripe seeds of *Rudbeckia*. This generation became adult from late April to June. In May late-instar nymphs and adults often ascended the plant to feed on the ripening seed heads of *Rudbeckia*. The spring generation began laying its eggs at this time, and the young nymphs of the second generation developed on the *Rudbeckia* seeds now falling to the ground. By early July the second generation adults appeared. The presence in early July of first to fifth instar nymphs at the same time as the second generation adults attests to the extended oviposition period by the first (spring) generation adults. In the laboratory, the spring generation females laid eggs over a period of several months at a rate of 5–6 a day. The second generation adults were immediately sexually active in July, unlike *L. diffusus* which first entered a brief reproductive diapause that lasted until late August or early September (Sweet, 1964). However, *L. barberi* females did not oviposit until October. Since it is relatively warm through October in Texas, this probably indicates a photoperiodic control of oviposition and production of diapause eggs similar to *L. diffusus* (Sweet, 1964). From October to December females laid eggs that entered diapause in the anatrepsis embryonic stage much as does *L. diffusus* (Sweet, 1964). Diapause eggs laid in the laboratory and placed in petri dishes in the original field environment hatched in early March at the same time as the field population. Kept in warm conditions (ca. 24°C) in the laboratory the eggs died in diapause. Kept in cool conditions (5°C, 10 hour photoperiod) in an incubator, some eggs hatched in March when restored to normal conditions, but most eggs died.

From an adult female a parasitic tachinid fly *Catharosia* sp. emerged and pupated on Nov. 8, 1979. Since *Ligyrocoris barberi* overwinters as eggs, the fly must either change hosts to overwinter or wait as a pupa or adult until new *Ligyrocoris* nymphs are available in the spring for parasitism. *Catharosia* spp. parasitize several rhyparochromine lygaeid species, including *Ligyrocoris* spp. (Sweet, 1964).

The overall scarcity of *L. barberi* compared to *L. diffusus*, its northern counterpart, may be better understood in relation to its life cycle. It is the only lygaeid in east central Texas known to overwinter as diapause eggs. The other species in the area overwinter only as adults, except for a few which evidently have no diapause and survive the winter in most stages. The second generation adults of *L. barberi* must survive from July to October when oviposition begins, and the diapause eggs must escape predation and dehydration through the mild winter to hatch in spring. In this mild climate adults, perhaps because of their mobility, evidently have an advantage for overwintering in diapause. In this context it is significant that at each location where *L. barberi* was found, the insects disappeared with concomitant massive invasions of fire ants (*Solenopsis invicta*). It seems possible that increased predation pressure exerted by fire ants may have disrupted the already delicate population dynamics of *L. barberi* in the area. I have not found *L. barberi* in the College Station area for the past 6 years despite careful searching for this species.

Reproductive isolation. Since the populations of *L. barberi* at College Station, Texas occurred in similar habitats, fed on similar seeds (*Rudbeckia hirta* L. = *R. serotina* Nutt, in Sweet, 1964), and have a similar phenology as the more northern *L. diffusus*, the question was originally raised as to whether these southern populations represented a distinct species ("*L. slossoni*") or constituted instead a distinctive southern subspecies of *L. diffusus*. Accordingly, similar to the studies made on reproduction isolation on species of *Ligyrocoris* in northeastern U.S.A. (Sweet, 1963, 1964), mating trials were run between *L. diffusus* and *L. barberi*. First (spring) and second generation (summer) females were used in both species. In different years three sets of trials were run, one set with *L. diffusus* from Colorado, the second set with *L. diffusus* from Wisconsin, and the third set with *L. diffusus* from Connecticut. Virgin females were reared in the laboratory from each population and potential reciprocal crosses were arranged between individual males and females. In control crosses between males and females of the same species all viable individuals mated and fertile eggs were copiously laid (5–6 eggs per day, > 100 eggs per female). The experimental crosses consisted of two types. In the first experimental series a male and a female were left together continuously, and any resulting oviposition and fertility were recorded. At least ten viable replicates of each trial set were run. In the second experimental series, mating trials were run and the sexual responses of the individuals monitored. At least ten observations of mating reactions of each trial set were run. Some individuals used in the first experimental series were sometimes used in the second experimental series.

In all experimental crosses between *L. barberi* and *L. diffusus* the females of each species behaved as though they were virgin females (Sweet, 1964) and laid only a few (3–10) infertile eggs. In behavioral trials, the males of each species reacted vigorously to the presence of females by initiating a courtship dance in which the male stridulates as he dances, much as observed by Sweet (1963, 1964) and Thorpe and Harrington (1981). The receptivity of a female was determined by exposing her to a male of her own population but not permitting copulation. Only receptive, unmated females were used in cross-population reciprocal trials. In each case, a receptive female vigorously evaded the male of the other species population. The males did not appear to discriminate between females of the two species and courted each equally. These experimental data, in conjunction with the morphological disconti-

nuity and with distributional evidence for a broad zone of sympatry, support the specific status of *L. barberi*.

Working with Wisconsin populations of *L. diffusus*, Thorpe and Harrington (1981) demonstrated, as hypothesized by Sweet (1963, 1964), that on contact with receptive females the males stridulate during the mating dance. However, Thorpe and Harrington discovered that male stridulation was not necessary for copulation to occur.

Although it was unobserved in my earlier studies (Sweet, 1963, 1964), I noted that a receptive female of *Ligyrocoris* spp. also often stridulated briefly when first approached by a male of her species. This movement, one or two strokes, was very quick and therefore readily missed while observing the vigorous activity of the males. This is significant since the female possesses the same stridulatory mechanism as the male. Nonreceptive females and females of the other species did not display this behavior and instead engaged in active avoidance behavior as described by Sweet (1964). It is difficult to accept this complex stridulatory behavior elicited so readily in courtship as being merely to function "in a pair maintenance capacity," as hypothesized by Thorpe and Harrington (1981), because other related species (tribe Myodochini) that do not stridulate copulated as readily in the laboratory as *Ligyrocoris* spp. In the laboratory after copulation, in both stridulating and nonstridulating species, the pairs showed no special "pair maintenance" and in each, males and females similarly went their separate ways. I will continue to investigate the role of stridulation in more detail in more naturalistic settings. Given that the stridulatory apparatus has been accepted as a major generic character in the Myodochini by Barber (1921) and Harrington (1980), it needs emphasizing here that *Zeridoneus costalis* (Sweet, 1964), *Z. knulli* Barber, and an undescribed species of *Zeridoneus* (Sweet, unpublished), which appear to lack the stridulatory apparatus, display a similar courtship dance to that of *Ligyrocoris* in which stridulating-like movements are made. As noted earlier (Sweet, 1964), in *Zeridoneus* the epidermal cells are aligned in parallel rows essentially as seen in the distinctive stridulitrum of *Ligyrocoris* s.s. (Fig. 9). This merits careful study, as the condition in *Zeridoneus* may be the primitive precursor leading to the evolution of the well-developed stridulatory structures in *Ligyrocoris*. *Ligyrocoris obscurus*, which has a definite but inconspicuous stridulitrum (Fig. 10), otherwise closely resembles species of *Zeridoneus* in its pronotal structure (Fig. 7), size, and coloration and may prove to be cladistically congeneric with *Zeridoneus*.

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